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## **Perceived responsibility for change as an outcome predictor in cognitive-behavioural group therapy**

Delsignore, A ; Carraro, G ; Mathier, F ; Znoj, H ; Schnyder, U

**Abstract:** **PURPOSE:** The study of control beliefs in psychotherapy research has been neglected in the past years. Based on the evidence that some patients do not benefit enough from therapy because of inadequate expectancies regarding the responsibility and the mechanisms of therapeutic change, assessing control beliefs specific to the psychotherapy context and linking them to therapy outcome can help highlighting this specific aspect and reactivating a neglected field of clinical research. **METHOD:** Using a new validated instrument (Questionnaire on Control Expectancies in Psychotherapy, TBK), this study investigated whether and how perceived responsibility for change predicts favourable response to group cognitive-behavioural therapy in a sample of 49 outpatients with social anxiety disorder (SAD). Patient engagement and therapy-related self-efficacy were assessed as possible process variables. **RESULTS:** Among therapy-related control beliefs, low powerful others expectancies (towards the therapist) were found to be the strongest predictor for clinical improvement at follow-up. At a process level, analyses of mediation showed that powerful others expectancies predicted therapy engagement, which then influenced the degree of clinical improvement on social anxiety levels and global symptoms. The association between therapy-specific internality and outcome was confirmed for social anxiety at follow-up and was partially mediated by therapy-related self-efficacy. **CONCLUSIONS:** Findings confirm that therapy-related control beliefs predict psychotherapy process (patient engagement and therapy-specific self-efficacy) and outcome in cognitive-behavioural group therapy for SAD. Implications for clinicians and for future research are discussed.

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# **Perceived responsibility for change as outcome predictor in cognitive- behavioural group therapy**

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## **Abstract**

**Purpose.** The study of control beliefs in psychotherapy research has been neglected in the past years. Based on the evidence that some patients do not benefit enough from therapy because of inadequate expectancies regarding the responsibility and the mechanisms of therapeutic change, assessing control beliefs specific to the psychotherapy context and linking them to therapy outcome can help highlighting this specific aspect and reactivating a neglected field of clinical research.

**Method.** Using a new validated instrument (Questionnaire on Control Expectancies in Psychotherapy, TBK), this study investigated whether and how perceived responsibility for change predicts favourable response to group cognitive-behavioural therapy in a sample of 49 outpatients with social anxiety disorder (SAD). Patient engagement and therapy-related self-efficacy were assessed as possible process variables.

**Results.** Among therapy-related control beliefs, low powerful others expectancies (towards the therapist) were found to be the strongest predictor for clinical improvement at follow-up. At a process level, analyses of mediation showed that powerful others expectancies predicted therapy engagement, which then influenced the degree of clinical improvement on social anxiety levels and global symptoms. The association between therapy-specific internality and outcome was

confirmed for social anxiety at follow-up and was partially mediated by therapy-related self-efficacy.

**Conclusions.** Findings confirm that therapy-related control beliefs predict psychotherapy process (patient engagement and therapy-specific self-efficacy) and outcome in cognitive-behavioural group therapy for SAD. Implications for clinicians and for future research are discussed.

Keywords: responsibility for change - control beliefs - expectancies -

Questionnaire on Control Expectancies in Psychotherapy - TBK - psychotherapy outcome - patient engagement - group therapy - cognitive-behavioural therapy - social anxiety disorder - social phobia

Although a large body of research confirms the efficacy of psychotherapy and the average patient clearly benefits from treatment (Orlinsky *et al.*, 2004), many improve only to a limited extent. Factors contributing to treatment response, dropout or relapse have been investigated from the patient's as well as from the therapist's perspective. Intrinsic motivation for change and patient engagement in the therapeutic process are emphasized as essential elements of a successful therapy (Kanfer *et al.*, 2006; Schulte & Eifert, 2002), and have been shown to predict clinical improvement across disorders and therapy orientations (Al-Darmaki & Kivlighan, 1993; Arnkoff *et al.*, 2002; Leung & Heimberg, 1996; Marmar *et al.*, 1989; Pelletier *et al.*, 1997). From a theoretical point of view, reactions and behaviours (such as therapy engagement) are determined by people's intention to reach a specific goal and by the expectation that they will be able to reach it (Bandura, 1989; Ajzen, 1991). Accordingly, patient expectancies can be considered as an important factor influencing openness for psychotherapy, therapy engagement and outcome.

Three major forms of patient expectancies and beliefs are described in the literature: outcome expectancies (reflecting expected improvement through therapy), expectancies concerning the patient's or therapist's roles, and control beliefs regarding the changeability of a psychological state. By studying patients' perceived responsibility for change, we focus on the third category. Consistent with Levenson's conceptualization (1972), control beliefs in the psychotherapy context can be defined as the expectation that a consequence (e.g. clinical improvement) either depends on the patient's own efforts (internality), on the therapist's competence (powerful others) or on the influence of unforeseeable factors (chance). Based on the evidence that some patients do not benefit enough, or cannot maintain therapeutic gains because of inadequate expectancies regarding the mechanisms of therapeutic change (Arnkoff *et al.*, 2002; Lambert,

2004), our specific hypothesis was that patients feeling responsible for change are more likely to benefit from therapy than patients expecting their therapist or chance factors to produce clinical improvement.

Although the literature shows a link between positive expectancies and therapy outcome (Arnkoff et al., 2002; Greenberg *et al.*, 2006), studies so far mostly focused on global expectations of improvement, rather than on specific, treatment-related expectancies or beliefs (Delsignore & Schnyder, 2007). Locus of control research has demonstrated a relationship between high internality, or low externality, and positive therapy outcome when control beliefs referred to changes in concrete problem behaviours such as stuttering (Craig, 1984), grief reactions (Kleber & Brom, 1987), social anxiety (Leung & Heimberg, 1996) or bulimic behaviour (Steel *et al.*, 2000) but not when they were measured as personality traits or as generalized control beliefs (Dhee-Perot *et al.*, 1996; Leung & Heimberg, 1996; Scharamski, 1984). These findings show that the predictive value of control beliefs is very domain specific and that a consistent prognosis of future behaviours or changes has to be based on expectancies referring to the studied context (psychotherapy).

It is interesting to note that the study of control beliefs in psychotherapy has been neglected in the past few years, and we suppose that the lack of consistent results might have contributed to this. This inconsistency may be due to the paucity of appropriate assessment instruments for the specific psychotherapy context as well as to the limited knowledge about mediating process variables in the past. This study, therefore, aimed at assessing therapy-specific control beliefs using a new validated instrument (Questionnaire on Control Expectancies in Psychotherapy, TBK). In a first step we explored direct associations between control beliefs and outcome of a cognitive-behavioural group therapy for SAD. As suggested by the expectancy theories of

motivation and action mentioned above as well as by the recent expectancy literature, we also studied the effect of process variables (therapy engagement and self-efficacy specific to the therapy context) as potential mediators between patient beliefs and clinical change.

## Method

### *Participants*

The sample consisted of 49 consecutive outpatients (49% women) participating in cognitive-behavioural group therapy for social anxiety disorder at a University Hospital Anxiety Disorders Unit. All subjects met the following inclusion criteria for group therapy and for the study: 1. social phobia as primary diagnosis according to DSM-IV criteria (confirmed by SCID-I interview, section “Social phobia”); 2. The Liebowitz Social Anxiety Scale baseline score had to be within the range of patients with social phobia (Backer *et al.* 2002:  $M=69\pm26$ ); 3. Willingness to expose themselves to feared situations during the sessions as well as in real life; 4. Ability to define up to three personal therapy goals (together with one of the therapists). The majority of patients presented comorbid disorders (anxiety disorders other than SAD:  $N=16$ , 33%; mood disorders:  $N=13$ , 27%; substance abuse:  $N=2$ , 4%). Before and during group therapy, about half of the patients ( $N=25$ , 51%) was on a stable dose of antidepressant medication; additionally, 5 of them were occasionally taking benzodiazepines or betablockers. 19 patients (39%) continued seeing their psychiatrist for issues not directly related to social anxiety (medication prescriptions, comorbidity). Most group participants ( $N=39$ , 80%) had previously been in individual psychotherapy. However, patients with vs. without prior therapy did not differ in terms of pre-treatment expectations (internal expectations:  $t=-.493$ ,  $df=47$ ,  $p=.624$ ; powerful others expectations:  $t=-.009$ ,  $df=47$ ,  $p=.993$ ; chance expectations:  $t=-.897$ ,  $df=47$ ,  $p=.794$ ). The average age was 35 years ( $SD=11$ ). 67% ( $N=33$ ) of the patients lived alone and did not have a partner; 12 subjects (25%) reported to have children.

Five patients (10%) terminated group therapy prematurely, i.e. after a mean of 2.0 sessions ( $SD=.8$ ). Of the 44 treatment completers, 41 (93%) participated in post-treatment assessments;



follow-up data were available for 35 patients. No significant differences were found between the follow-up completers and drop-outs in terms of pre-treatment symptom severity except for higher pre-treatment SCL-9 scores in the drop-out group ( $M=2.0\pm.8$  vs.  $M=1.5\pm.6$ ; t-test:  $t=-2.19$ ,  $p<.050$ ,  $df=47$ ).

### ***Treatment***

Patients participated in a manualized 10-session cognitive-behavioural group therapy for social anxiety disorder over a 3-month period, where the last 5 sessions were staggered to allow time to implement in “real life” the strategies practiced in the group. One additional group session was held at the 3 month-follow-up in order to reinforce the gains. Each session lasted 90 minutes and there were 6 to 8 participants in each of the 7 groups. The multimodal treatment was developed by the first two authors (AD, GC) based on the approaches of Hope, Heimberg and Stravynski (Hope & Heimberg, 1993; Stravynski, 2000) as well as on the evaluation of previous group therapies (Carraro & Delsignore, 2006; Mihaescu & Delsignore, 1997) and is routinely held at our Anxiety Disorders Unit. Before entering group therapy, each patient came for two intake sessions with one of the therapists. The main purpose of the intake was to 1) confirm the SAD diagnosis (clinical interview); 2) clarify the indication and motivation for group treatment (based on inclusion criterion 3) described above) and 3) define two or three specific personal goals to work on in the course of treatment. The core components of the group treatment included 1) applying the cognitive-behavioural model for SAD to typical social situations experienced by the patients; 2) graded in-session exposures to feared social interactions (e.g. role playing of real situations, video feedback, in vivo exposures in town, shifting attention outward) as well as individualized exposures in real life; 3) addressing misconceptions of social situations and, based

on new experiences, cognitive restructuring by identifying and challenging dysfunctional schemas (e.g. unrelenting standards or abandonment schemas); 4) developing personal strategies and identifying resources; 5) planning of realistic goals for the time after group therapy; 6) relapse prevention.

### ***Therapists***

Treatment was delivered by three cognitive-behavioural therapists (two clinical psychologists and one psychiatrist), all of whom had extensive prior experience with group therapy for anxiety disorders. Each group was led by two of the three therapists; the breakdown of group participation by therapist was 6, 5 and 3.

### ***Measures***

Patients and therapists completed the assessment measures before starting group therapy, after session 10 (post-treatment) and again at the 3-month-follow-up.

*Social anxiety.* Social anxiety symptomatology was assessed with the self-rating version of the Liebowitz Social Anxiety Scale (LSAS), which measures social anxiety and avoidance in 24 typical social situations. Subjects are asked to rate 48 items on a 4-point scale. The total score ranges from 0 to 144, where higher scores indicate greater severity. The LSAS self-rating version has shown good psychometric properties (Baker *et al.*, 2002; Stangier & Heidenreich, in progress).

*Self-efficacy.* The Generalized Self-Efficacy Scale was included as a global measure of patients' belief that their actions are responsible for successful outcomes. The global score ranges from 10

to 40 (10 items). The Self-Efficacy Scale has shown good homogeneity, reliability and validity (Schwarzer, 1994).

*Depressive mood.* The degree of depression was assessed with the Beck Depression Scale BDI, 21 items version (Beck *et al.*, 1961).

*Global symptom severity.* A one-dimensional short version of the Symptom-Checklist (SCL-K-9) was included as a measure of global symptom severity. The SCL-K-9 is a 9-item scale with good psychometric properties showing a high correlation with the GSI-90 ( $r=.93$ ) (Klaghofer & Brähler, 2001). The global score ranges from 0 to 4.

*Perceived responsibility for change and therapy-related self-efficacy.* The Questionnaire on Control Expectancies in Psychotherapy (TBK) assesses patients' internal and external control expectancies related to the specific psychotherapy process. It consists of 18 items and three scales: therapy-related internality, powerful others and chance (e.g. Internality : "Whether or not I actively engage in therapy depends on my own efforts"; Powerful others: "Getting better during therapy depends mostly on the competence of my therapist"; Chance: "Whether or not I relapse after therapy has ended is a matter of chance"). One additional scale consisting of 6 items measures self-efficacy specific to the psychotherapy context. The TBK has been validated in a sample of 221 outpatients (Delsignore *et al.*, 2006). Factor analyses confirmed the three scales that had been defined a priori (eigenvalues: internality=4.40; powerful others=3.10; chance=1.90); the three dimensions explained 52% of the total variance. The internal scale consistencies varied between .77 and .81 (.86 for the self-efficacy scale). Convergent validity analyses indicated modest correlations ( $r=.33$  to  $r=.44$ ,  $p<.01$ ) between therapy-related expectancies and global control beliefs assessed with Levenson's IPC-scale (1972), confirming that the two instruments measure similar but not identical constructs.

*Therapy engagement.* The actual patient engagement during and between sessions was assessed by the therapists on the two-item, seven-point Likert scale “effort” of the Bernese post-session Report (Regli & Grawe, in progress) at session 5, 10 as well as at follow-up. In order to minimize the influence of therapist’s perception of client progress, the earliest scores (i.e., session 5 ratings) were used for mediational analyses. The internal consistency of the therapy engagement scale in this sample was Cronbach’s  $\alpha=.91$ . I Intraclass correlation coefficients (ICC, consistency type) based on 34 ratings provided by two of the therapists ranged from  $ICC=.84$  (fifth session) to  $ICC=.78$  at follow-up.

### ***Statistical analyses***

Two-tailed t-tests were used for comparison of continuous variables among groups. Treatment effects were first examined with univariate analyses of variance for repeated measures; post-hoc comparisons (pre- to post-treatment and post-treatment to follow-up) were based on paired-samples t-tests. Relationships between each type of control belief (i.e., internality, powerful others and chance) and therapy outcome were explored using bivariate correlations. In order to test the effect of baseline scores and perceived responsibility for change on therapy outcome, we conducted four separate hierarchical regression analysis for each outcome measure (baseline scores were entered in the first step of the analyses, control beliefs were then added simultaneously in the second step). Mediation analyses were carried out to determine whether therapy engagement and therapy-related self-efficacy can explain how control beliefs affect outcome. According to the traditional requirements, three criteria have to be met for such a mediational relationship: a) all three variables (predictor, mediating variable and dependent variable) must significantly correlate with each other; b) there must be a temporal precedence of

the predictor; c) a significant relationship between the predictor (control beliefs) and the dependent variable (outcome) must be diminished or eliminated when the mediators (therapy engagement and therapy-specific self-efficacy) are introduced in the model (Baron & Kenny, 1986). The significance of the decrease in the path coefficient from predictor to outcome in the presence of the mediators was calculated with one-sided Sobel tests.

## Results

### *Group therapy outcome*

As shown in Table 1, patients improved significantly on all measures at the end of group therapy compared to pre-treatment. Follow-up analyses showed that therapeutic gains were maintained or had even increased three-months after the end of therapy. The most significant changes were attained in the reduction of social anxiety (LSAS) and in the increase of self-efficacy (SE).

### *Direct relationship between perceived responsibility for change and outcome*

Bivariate correlational analyses between therapy-specific pre-treatment control beliefs and individual improvement scores revealed no significant link at the end of therapy (Table 2). Consistent findings were however found at follow-up: low therapy-specific powerful others scores were significantly associated with reduction in social anxiety (LSAS), global symptom severity (SCL), depression (BDI) and with self-efficacy increase (SE). Pre-treatment internal expectations correlated positively with social anxiety reduction three months after termination of group therapy.

Multivariate relationships were explored using hierarchical multiple regression analysis in two steps: first we entered pre-treatment scores, and in a second step we simultaneously added control beliefs (internality, powerful others, and chance). As shown in Table 3, post-treatment outcome was predicted by step one but not by patients' perceived responsibility for change (step 2). At follow-up, pre-treatment symptom severity accounted for 14 to 41% of the variance of clinical improvement. In the full regression models, social anxiety, depression and global symptom severity were significantly or marginally significantly predicted by pre-treatment

scores and therapy-related control beliefs. The combination of all three control beliefs (step 2), however, contributed only modestly for additional variance in follow-up scores after pre-treatment symptomatology had been controlled for. As shown by the  $\beta$ -coefficients, low powerful others expectations were (together with pre-treatment scores) the only therapy-specific control belief predicting therapy success at three-month follow-up.

### ***Mediator analyses***

Mediator analyses were conducted with the following variables: pre-treatment predictors (therapy-related control beliefs); mediators (therapy engagement, therapy-related self-efficacy) and symptom improvement at follow-up.

#### *Relationships between predictors, mediators and dependent variables*

Significant correlations between predictors (powerful others, internality) and dependent variables (symptom improvement) at follow-up have been reported in Table 2. The mediator variable therapy engagement was positively associated with the predictor powerful others ( $r = -.45$ ,  $p < .010$ ), while the mediator variable therapy-related self-efficacy correlated with the predictor internality ( $r = .31$ ,  $p < .050$ ). Therapy engagement was significantly associated with 2 of 4 outcome measures (LSAS, SCL); high therapy-related self-efficacy showed a positive correlation with social anxiety decrease (LSAS). Details are given in Figure 1.

#### *Mediational relationships*

The final test of mediation involved checking whether the association between control beliefs and therapy outcome was weakened after accounting for the mediators. As shown in Figure 1, powerful others expectancy effects on LSAS and SCL levels at follow-up were partially mediated by patients' engagement in the therapy process. Sobel tests of the change in the coefficient sizes

indicated that the direct relationship between powerful others and outcome decreased significantly (LSAS) or nearly significantly (SCL) when the mediator patient engagement was included in the equation ( $z=2.13$ ,  $p=.032$  resp.  $z=1.41$ ,  $p=.078$ ). The mediational path explained 20% (LSAS) and 21% (SCL) of the outcome variance. Similarly, the effect of internal control beliefs on social anxiety levels at follow-up was attenuated when we included therapy-related self-efficacy in the analyses, suggesting a partial mediation effect by self-efficacy ( $z=-1.59$ ,  $p=.055$ , 27% of outcome variance explained by the mediation path).



## Discussion

The aim of this study was to investigate how patients' perceived responsibility for change contributes to therapy outcome. Although some previous studies have confirmed the association between locus of control and psychotherapy outcome, this is the first study focusing on the role of specific, therapy-related control beliefs using a validated specific instrument and linking them to outcome as well as to process variables.

In a sample of patients undergoing cognitive-behavioural group therapy for SAD, results show that low powerful others expectations predicted clinical improvement on all outcome measures at follow-up, while internal expectations were linked to a reduction in social anxiety levels.

At a process level, mediational analyses confirmed that low expectations towards the therapist predicted active engagement in therapy, which then led to more positive outcomes in terms of social anxiety and general symptomatology. The relationship between therapy-specific internality and a reduction of social anxiety was partially mediated by therapy-related self-efficacy. The findings support our main hypothesis and are consistent with expectancy theories of motivation and action: patients believing that therapy success does not primarily depend on their therapist's efforts will tend to engage actively in therapy, and this effort will pay off at the level of clinical improvement. Our results replicate and extend previous findings suggesting that patient treatment expectancies affect outcome by means of active engagement in the therapeutic process or in the relationship to the therapist (Abouguendia *et al.*, 2004; Joyce *et al.*, 2003; Mathier, 2004; Meyer *et al.*, 2002).

In the course of group therapy, most patients were able to achieve substantial gains regardless of initial control beliefs. During the post treatment period however, without the support of the therapists and the group, patients with low powerful others expectancies were more likely to

reach further gains than patients expecting their therapist to be responsible for the success of therapy. That high powerful others expectations hinder long-term progress but not improvement during group therapy can be explained from a theoretical as well as from an empirical point of view. In a well-functioning group therapy, through guidance and understanding, planning and regular checking on realistic short-term goals, most patients seem to get engaged and succeed in reaching some positive changes. It is even possible that patients with high powerful others expectations were especially responsive to the therapists' or the group's guidance and suggestions, and therefore showed a good compliance, while the engagement of patients with low powerful others expectations was of a more intrinsic nature. As the regular support through the group ends, it is plausible that self-regulation processes become essential for maintaining and continuing to make gains. According to the self-determination theory (Deci & Ryan, 1985), individuals striving towards a goal based on intrinsic motivation are more independent from external contingencies (such as weekly feedbacks from the group) and more likely to reach their goals. The hypothesis can be made that patients with high powerful others expectations are more extrinsically motivated and might therefore need more support for achieving long-term goals. An additional interpretation of the negative link between external control beliefs and long-term outcome comes from causal attribution theories: patients with high powerful others expectancies might tend to attribute the gains of group therapy to the competence of the therapists and not to their own engagement, which would have a negative effect on their self-efficacy beliefs. Post-therapy attributions concerning the mechanisms of therapeutic change are known to influence the stability of outcome (Weinberger, 1999). Our data suggest the following clinical implication: measuring therapy-specific control beliefs (especially those concerning the therapist) could help detect patients at risk to lose the gains they had achieved during therapy. Possible practical

consequences of this finding could be a more specific preparation of such patients for group therapy (for instance with open discussions of unfavourable expectancies, as shown to be effective in individual psychotherapy, Mathier 2004) or the planning of additional post-treatment sessions enhancing self-efficacy and self-management strategies for patients with high powerful others expectancies.

Some strengths and limitations of this study should be noted as well. The present work assessed perceived responsibility for change with a validated instrument and analyzed their relationship with the outcome of group therapy in an homogeneous sample of patients with social anxiety, eliminating the potential effect of confounding variables such as other primary diagnoses or setting variables potentially affecting expectancies. At the same time, our results refer to a sample of social phobic patients undergoing cognitive-behavioural group therapy and cannot be generalized to all psychotherapy patients. Although therapy-specific control beliefs in our sample did not significantly differ from those found in a larger heterogeneous sample of outpatients (Delsignore et al., 2006), differences in other motivational variables (as for instance a possibly greater readiness for change compared to patients seeking individual therapy) cannot be ruled out. Also, it should be tested whether the mediating variable “therapy engagement” plays the same role in therapy settings other than cognitive-behavioural group therapy. The presented findings need to be replicated for individual therapy, for different therapeutic orientations (e.g. psychodynamic psychotherapy) and for patients suffering from other disorders than social anxiety (e.g. depression).

Finally, by focusing on the path control beliefs-active engagement-therapy improvement, we chose to cover one particular aspect of the psychotherapy process from the patients’ perspective. Our results should however be considered in a larger context where a successful therapy results

from the combination between patients' responsiveness and what the therapist has to offer (Ambühl & Grawe, 1988; Elkin *et al.*, 1999). Furthermore, therapists can reinforce patients' initiative by providing an environment where patients can develop their own success stories by experiencing mastery over their anxiety (Grawe, 2006). The data presented here suggest that minimizing the importance of the therapist through low powerful others expectations can be an efficient way of facilitating active engagement and long-term clinical improvement in group therapy. Accordingly, patients should be helped enhance their receptiveness for this aspect.

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## TABLES

Table 1

Group therapy outcome: pre-treatment, post-treatment and follow-up scores

	Mean scores							Pre-post			Post-FU		
	Pre	Post	FU	F	df	p	$\eta^2$	t	df	p	t	df	p
	M(SD)	M(SD)	M(SD)										
LSAS	68.8 (21.6)	51.8 (22.6)	45.4 (23.6)	37.13	2, 62	***	.55	5.18	40	***	2.58	31	**
SE <sup>a</sup>	21.41 (3.9)	25.3 (4.1)	26.8 (4.8)	28.23	2, 62	***	.48	-6.0	40	***	-2.1	31	*
SCL	1.5 (.6)	1.1 (.6)	1.0 (.6)	14.53	2, 64	***	.31	4.9	41	***	.76	32	ns
BDI	15.6 (6.6)	10.3 (6.8)	9.6 (8.0)	14.35	2, 64	***	.31	4.7	41	***	.59	32	ns

LSAS= Liebowitz Social Anxiety Scale; SE=Self-Efficacy Expectations Scale; SCL=Symptom-Checklist (9-item version); BDI=Beck Depression Inventory

<sup>a</sup> high score means desirable outcome (vs. symptom severity)

\* p<.05; \*\*p<.01; \*\*\* p<.001; ns=not significant



Table 2

Relationship between therapy-specific control beliefs and clinical improvement at post-treatment and follow-up

Improvement	Post-treatment			Follow-up		
	Internality	Powerful others	Chance	Internality	Powerful others	Chance
LSAS	-.05	-.01	-.04	.33*	-.39*	.12
SE <sup>a</sup>	.09	.21	.29	-.07	.34*	.12
SCL	.20	-.09	-.22	.16	-.38*	.11
BDI	.05	-.05	-.08	.20	-.34*	-.21

Pearson correlations; \*  $p < .05$

LSAS= Liebowitz Social Anxiety Scale; SE=Self-Efficacy Expectations Scale; SCL=Symptom-Checklist (9-item version); BDI=Beck Depression Inventory

<sup>a</sup> negative score reflects improvement

Table 3

Hierarchical regression analysis predicting outcome at post-treatment and follow-up

		Post-treatment				Follow-up			
Outcome variable		R <sup>2</sup>	R <sup>2</sup> <sub>change</sub>	F <sub>change</sub>	β	R <sup>2</sup>	R <sup>2</sup> <sub>change</sub>	F <sub>change</sub>	β
LSAS	Step 1:	.56				.41			
	Pre-treatment score				.75***				.64***
	Step 2:	.56	<.01	.09		.52	.11	2.35(*)	
	Pre-treatment score				.73***				.65***
	Internality				-.02				.19
	Powerful Others				<.01				.26(*)
	Chance				.06				-.07
SE <sup>a</sup>	Step 1:	.35				.14			
	Pre-treatment score				.59***				.37*
	Step 2:	.41	.06	1.17		.21	.07	.87	
	Pre-treatment score				.53***				.43**
	Internality				.04				.17
	Powerful Others				.12				-.19
	Chance				-.28(*)				-.06
SCL	Step 1:	.45				.23			
	Pre-treatment score				.67***				.48***
	Step 2:	.47	.02	.27		.39	.16	2.60(*)	
	Pre-treatment score				.66***				.49***
	Internality				-.08				-.08
	Powerful Others				<.01				.39*
	Chance				.07				-.15
BDI	Step 1:	.54				.38			
	Pre-treatment score				.74***				.62***
	Step 2:	.55	<.01	.12		.55	.17	3.71*	
	Pre-treatment score				.74***				.73***
	Internality				-.06				-.09
	Powerful Others				.01				.32*
	Chance				.03				.32*

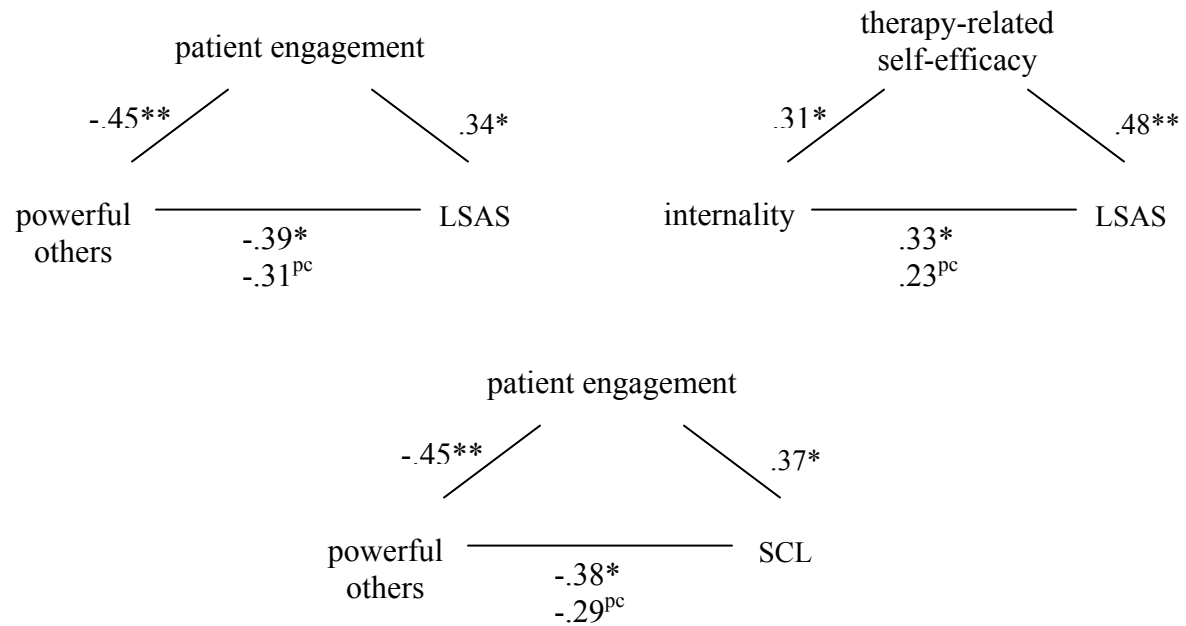
β =standardized β coefficients. (\*) p&lt;.10; \* p&lt;.05; \*\*p&lt;.01; \*\*\* p&lt;.001

LSAS= Liebowitz Social Anxiety Scale; SE=Self-Efficacy Expectations Scale; SCL=Symptom-Checklist (9-item version); BDI=Beck Depression Inventory

<sup>a</sup>: high score means desirable outcome

Figure 1

Therapy engagement and therapy-related self-efficacy as mediators of control beliefs effects on clinical improvement at follow-up



Pearson correlations; <sup>pc</sup> partial correlations (accounting for the mediator); \*  $p < .05$ ; \*\*  $p < .01$   
 LSAS= Liebowitz Social Anxiety Scale; SCL=Symptom-Checklist (9-item version)